

# PATENT COOPERATION TREATY

From the

INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

*NP Deadline*

## PCT

To:

HUCKER, Nerys  
Intellectual Property Department  
Dyson Technology Limited  
Tetbury Hill  
Malmesbury Wiltshire SN16 0PP  
GRANDE BRETAGNE

DUE DATE	5.8.06.	<b>RECEIVED</b>  <b>27 MAR 2006</b>  NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (PCT Rule 71.1)
DATABASE		
ADMIN	IP DEPT	
ATTORNEY	NH	

Date of mailing  
(day/month/year)

28.03.2006

Applicant's or agent's file reference

WOP0315

### IMPORTANT NOTIFICATION

International application No.

PCT/GB2005/000296

International filing date (day/month/year)

27.01.2005

Priority date (day/month/year)

05.02.2004

Applicant

DYSON TECHNOLOGY LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Gehl, P

Tel. +31 70 340-2553





# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WOP0315	<b>FOR FURTHER ACTION</b>  See Form PCT/PEA/416	
International application No. PCT/GB2005/000296	International filing date ( <i>day/month/year</i> ) 27.01.2005	Priority date ( <i>day/month/year</i> ) 05.02.2004
International Patent Classification (IPC) or national classification and IPC H02P7/05		
Applicant DYSON TECHNOLOGY LIMITED et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i>) a total of sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  18.08.2005	Date of completion of this report  28.03.2006	
Name and mailing address of the international preliminary examining authority:   <div style="margin-left: 10px;"> European Patent Office - P.B. 5818 Patentlaan 2  NL-2280 HV Rijswijk - Pays Bas  Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  Fax: +31 70 340 - 3016 </div>	Authorized Officer  Davis, A  Telephone No. +31 70 340- <div style="text-align: right;">  </div>	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2005/000296

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-17 as originally filed

**Drawings, Sheets**

1/10-10/10 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/GB2005/000296

**V Reasoned statement**

**1 Reference is made to the following documents:**

D1: US-A-4,611,157

D2: US-A-6,222,335

D3: US-A-4,772,839

**2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.**

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1 discloses a method of compensating for the angular position of energisation of a phase winding in a switched reluctance machine according to the DC link current.

**2.1 The subject-matter of claim 1 therefore differs from this known method in that DC link voltage is used in place of DC link current.**

The problem to be solved by the present invention may therefore be regarded as how to improve the prior art control of SR machines.

**2.2 The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons since the skilled person already has an indication to monitor the DC link voltage for use in compensation schemes for speed and torque (see applicant's own cited prior art) and also D2 and D3. D2 show a method for compensation for low DC voltage for an induction machine whilst D3 shows that when estimating the rotor position in an SR machine that the DC link voltage must not vary outside a particular threshold for reliable estimation.**

Thus the skilled person would readily contemplate including DC link voltage into the compensation method taught by D1.

**3 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claim 9 which therefore is also considered not inventive.**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/GB2005/000296

- 4 Dependent claims 2-8 and 10 to 17 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see documents D1, D2 and D3 and the corresponding passages cited in the search report.
- 5 It is also noted that the applicant's own cited prior art may be considered as removing the novelty of claim 1 and 9. The applicant concedes in the last sentence of page 1 of the description that a compensated speed and compensated torque value are taught in the cited prior art. However if it is possible to interpret this compensated value as yielding a "predetermined correction to the angular position of energisation of the phase winding" then such an interpretation of the prior art would remove the novelty of independent claims 1 and 9.

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H02P7/05

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H02P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 611 157 A (MILLER ET AL) 9 September 1986 (1986-09-09) column 2, line 26 - column 7, line 26; figures 1-9	1-17
X	US 6 222 335 B1 (HITI SILVA ET AL) 24 April 2001 (2001-04-24) column 2, line 16 - column 5, line 9; figure 1	1
A	US 4 772 839 A (MACMINN ET AL) 20 September 1988 (1988-09-20) column 4, line 23 - column 10, line 12; figures 1-4	1-17

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \* & \* document member of the same patent family

Date of the actual completion of the international search

12 May 2005

Date of mailing of the international search report

25/05/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2250 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Davis, A

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern

Application No

PCT/GB2005/000296

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4611157	A	09-09-1986	NONE	
US 6222335	B1	24-04-2001	NONE	
US 4772839	A	20-09-1988	DE 3836240 A1	24-05-1989
			FR 2623033 A1	12-05-1989
			GB 2211682 A ,B	05-07-1989
			IT 1231535 B	17-12-1991
			JP 1164288 A	28-06-1989
			KR 9202369 B1	23-03-1992





INVESTOR IN PEOPLE

Application No: GB0402528.4

Examiner: Miss Ruth Atkinson

Claims searched: All

Date of search: 4 August 2004

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular reference
X	1, 8, 9 and 13 at least	JP 2003244981 A (MITSUBISHI ELECTRIC CORP) See WPI abstract no. 2003-833643 and PAJ abstract
Y	1, 8, 9, 13 at least	US 4168455 A (SOEDA) See "Summary of the invention"
A		US 5724477 A (SWITCHED RELUCTANCE DRIVES LTD)

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>w</sup> :

H2J

Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

H02P

The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC, PAJ